

December 2013

## Introduction to the Data Tables and Water Quality Charts

### *Obed Mountain Mine Incident*

This document provides additional information about the findings of independent experts regarding water quality in the Athabasca River following the breach of a water pond at the Obed Mountain Mine on October 31, 2013.

The data [tables](#) and [charts](#) detailing the test results on water quality and total suspended solids (TSS) in the Athabasca River are posted on [www.obed.ca](http://www.obed.ca).

#### **Contents of the water released from the Obed pond**

The composition of the earth in the mine area is similar to the sediment which was carried by the release that flowed into the Apetowun and Plante Creeks and then into the Athabasca River.

#### **Overview of Data Tables and Water Quality Charts**

- The water quality findings relate to the water release that entered the creeks and the Athabasca River.
- Many parameters have been charted, including total metals, dissolved metals and total suspended solids.
- The [tables](#) and [charts](#) show the water quality in the two creeks and the Athabasca River. These also include water quality results upstream of the release.
- The [charts](#) make reference to the most stringent water quality guidelines, where applicable. These include guidelines for drinking water and protection of aquatic life.
- The [tables](#) are comprehensive, while the [charts](#) summarize key findings.

#### **Summary of Water Quality Charts**

- Based on testing to date, the analysis concluded that there has been no risk to human health.
- The released water contained elevated concentrations of many organic and inorganic materials.
- High turbidity (cloudiness) and [TSS](#) were recorded within the water in the creeks and the Athabasca River initially when the incident occurred and in the days immediately following. Turbidity values and TSS values within the plume declined as it traveled downstream.
- The [charts](#) show that the metals and other materials in the water decreased with the [TSS](#), which suggests they were generally bound to sediment particles.
- Total metals concentrations exceeded water quality guidelines at several locations following the release. The majority of dissolved metals concentrations did not exceed water quality guidelines.
- Water quality in the two creeks was affected by sediment released in the initial days following the incident, but improved rapidly.
- The water quality guidelines shown on the charts for comparison are guidelines for treated water. The water samples that were tested are untreated.

## **Next phase of water quality sampling**

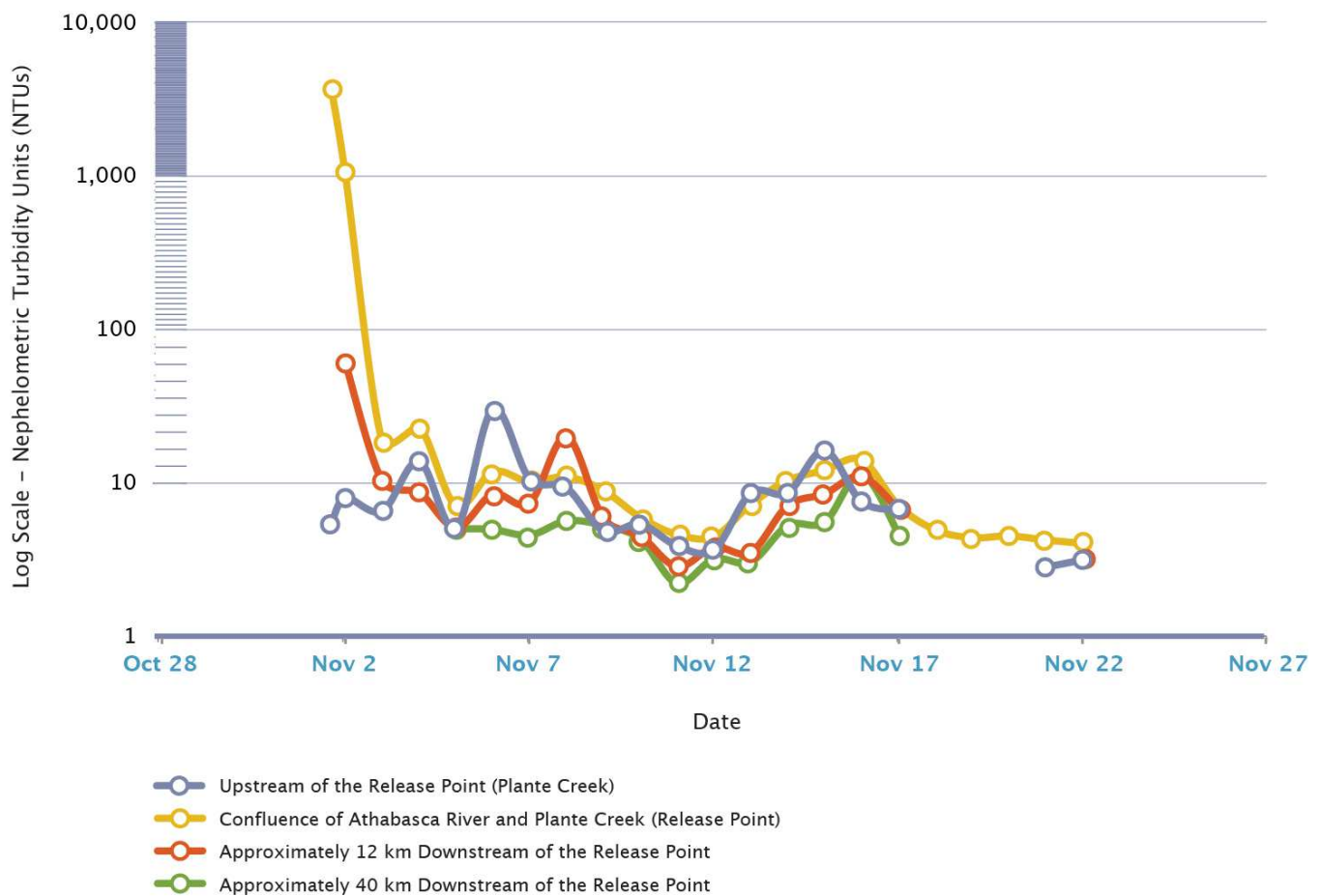
- Data sondes have been installed at various locations along the Athabasca River and are collecting turbidity values of water flowing under the ice.
- Water sampling of the near-field area (the two creeks and the first 32 kilometres of the Athabasca River) is ongoing. Additional water quality testing locations are under review as the sampling program is transitioning from an immediate to a mid-term program.

## What is turbidity?

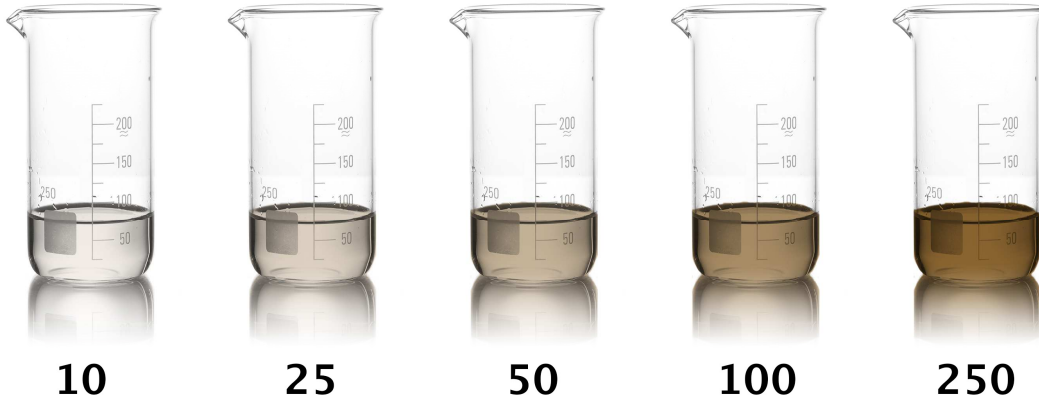
Turbidity is a visual characteristic that describes the clarity or cloudiness of water. High turbidity can be caused by silt or sediment that enters a river as a result of natural occurrences, such as heavy rains, snowmelt, windstorms and landslides. Sediment that is carried by a river settles and disperses.

When the released water entered the Athabasca River, it increased the level of turbidity in the water. The following graph shows how the turbidity dropped rapidly in the first couple of days following the release and continued to fall to seasonal levels in the river. The blue line illustrates the turbidity of the water upstream of the release – the natural turbidity of the river. Turbidity is measured in Nephelometric Turbidity Units (NTUs).

**Turbidity**  
Upstream and downstream of where the release entered the Athabasca River from Plante Creek



## ***What does turbid water look like?***

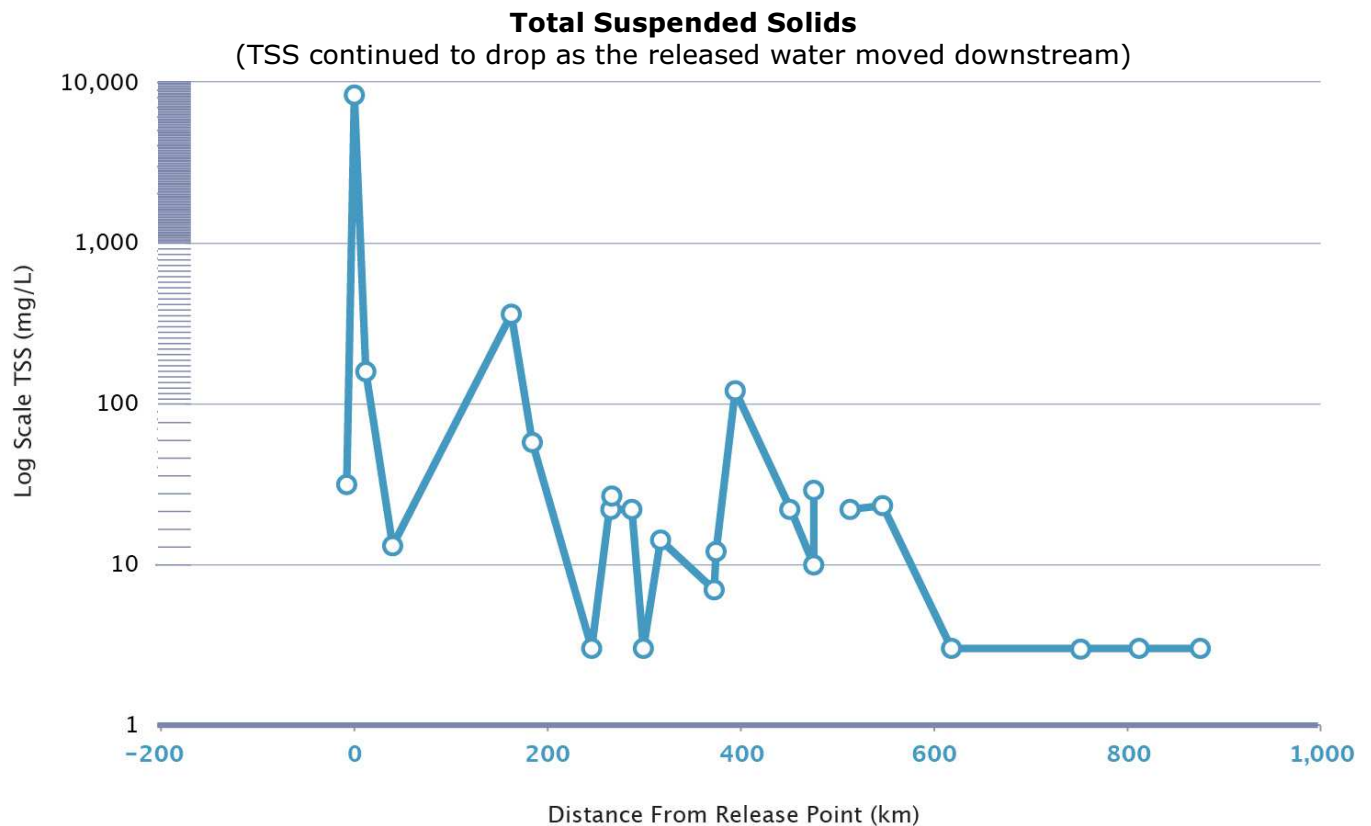


Illustrative example of water with varying degrees of turbidity; number represents NTUs

## What are Total Suspended Solids?

The second measure of muddy water is a count of the suspended solids or particles in the water. Total Suspended Solids (TSS) are measured in milligrams per litre (mg/L).

The measurements of TSS in the Athabasca River show how the water was very muddy for a period immediately following the release, but then dropped rapidly soon after the plume moved downstream.



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**Additional information:** [www.obed.ca](http://www.obed.ca)

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